UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

July 29, 2016

REPLY TO THE ATTENTION OF: LU-9J

Mr. Doug Reid-Green
BASF Project Manager
BASF Corporation
100 Campus Drive
Florham Park, New Jersey 07932

RE: Revised Lake Macatawa Sediment Baseline Ecological Risk Assessment Report and Corrective Measures Implementation Work Plan Addendum, BASF Corporation, 471 Howard Avenue, Holland, MI (MID 048 223 986)

Dear Mr. Reid-Green:

The U.S. Environmental Protection Agency has completed its review of the April 30, 2016 revised Lake Macatawa Sediment Baseline Ecological Risk Assessment (BERA) and Data Summary Report; and Corrective Measures Implementation (CMI) Work Plan Addendum, for the BASF facility in Holland, Michigan. These reports were submitted in response to EPA's March 11, 2016 comments on the November 18, 2015 BERA. EPA is approving the BERA and the risk-based sediment remediation goal of 6,400 mg/kg for barium in Lake Macatawa sediments.

The EPA has the following comments on the CMI Work Plan Addendum. Please respond to these deficiencies and revise the CMI Work Plan Addendum within 45 days of the date of this letter.

1. Copper concentrations that may result in toxicity to benthic biota remains an uncertainty in the BERA. Because the toxicity tests only included sediments with a maximum copper concentration of 337 mg/kg, and higher copper concentrations were detected in the 2 to 6 foot depth intervals for several sample locations (e.g., copper concentration of 8,660 mg/kg in the 4 to 6 foot depth interval at location SD-30), it is uncertain whether there would be adverse effects to benthic receptors if sediments at depth were to become resuspended. The available sediment toxicity test results do not provide sufficient data to identify lowest effect levels for copper. Therefore, EPA suggests removal of copper contaminated sediments at three sample locations: SD-28 (2-4 foot depth), SD-30 (2-6 foot depth), and SD-31 (2-6 foot depth). This will increase the dredge depth at three locations, but remove the highest copper concentrations, as well as some higher barium concentrations at SD-30 and SD-31(3,000 to 5,000 mg/kg). This will appreciably reduce the uncertainty of any risks due to contamination left in place.

As an alternative, BASF may provide a hydrodynamic analysis or evaluation of the potential for scour of the sand cover to be put in place at these locations, taking into consideration the effects of industrial and recreational prop wash; wave action; and storm and current erosion. If the evaluation indicates a lack of scour potential, then removal of copper contaminated sediments at these three locations would be unnecessary.

2. Include the existing 2011 and 2015 sediment sampling data for Barium on Figure 2-2. BASF must propose confirmation sampling, or demonstrate that there is sufficient data near the perimeter of the excavation polygons to ensure that all sediment containing Barium above the cleanup goal will be removed.

3. Expand the first bullet of Section 2.2 to document the barium exceedance of 10,700 mg/kg reported in 2015 in surface sediment (0-0.5 foot interval) from location SD-31. Figure 2-1 correctly identifies SD-31 as the location of a barium exceedance to be addressed as part of the subject removal action.

4. The third bullet in Section 2.2 states that none of the sediment samples collected 2-6 feet below the lake bed surface contained barium concentrations above 6,400 mg/kg. However, Appendix A only includes data for depth intervals from 0-0.5 feet, 0.5-2 feet, and 2-4 feet. Expand the appendix to include data from the 4-6 foot depth interval, confirming vertical delineation of barium exceedances to a depth of 6 feet. Copper data should also be included.

5. Expand the first paragraph of Section 2.6 to indicate when the potential for significant recreational boating wake will be evaluated and what decision criterion will necessitate use of Type II turbidity curtains, and to confirm plans that a Type II curtain will be available for immediate use if the decision criterion is met. The plan should indicate that, should a Type II turbidity curtain be needed, dredging will be halted until the curtain is anchored or until the cause of turbidity is controlled or ceases.

6. Replace the qualitative term "sustained" in the second paragraph of Section 2.6 with specific time frames (e.g., one minute, five minutes) after which continued turbidity levels above background will trigger corrective action during dredging and sediment loading activities. Potential corrective measures should also be described.

7. Expand the first paragraph on page 2-4 to require continuous ambient air dust monitoring during sediment unloading, stabilization, and loading within the upland area at the former Howard Avenue facility. The Addendum must also present criteria to be used in determining the acceptability of any on-site or off-site fugitive dust emissions, as well as associated corrective actions that may be implemented.

8. Section 5.0 should include a bullet point for the preparation, submittal, and EPA review of a report detailing completion of the sediment dredging.

If you have any questions regarding this letter, please contact me at Gmitro.Todd@epa.gov or (312) 886-5909.

Sincerely,

Todd Gmitro, Project Manager
Corrective Action Section 1
Remediation and Reuse Branch
Land and Chemicals Division

cc: Randy Ellis, AECOM
Jeffrey Cahn, EPA